

Zine: art and science & culture communication in astronomy

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Abstract. The present work seeks to broadly understand the potential of the independent publishing format known as the “zine” as a medium of scientific and cultural communication (scc) in astronomy and, more specifically, why it can be a highly relevant medium to be applied within this field. Zines are an independent publication format with a long history of critically communicating ideas, an alternative medium infused with art and literature. Astronomy is an extremely multidisciplinary science that still faces significant barriers in public understanding and popular imagination. Often, mainstream media is unable to communicate it effectively, reducing it to prevailing simplified interpretations. Scc in astronomy is an important tool for social inclusion; therefore, approaching various astronomical topics from an alternative perspective, one that does not reduce this vast and rich body of knowledge, holds transformative potential for society. This research involved collecting and reviewing the literature on this medium for the future creation of a collection of astronomy, focused scc zines. Historically, a wide range of applications of zines has been observed. Based on the references of studies examining this medium, we can identify positive results from its use in classrooms as a teaching tool, proving to be excellent study material in various fields. The possibility of applying this technology to scc in Astronomy would provide a way to communicate astronomical and scientific topics more broadly using transformative tools capable of reshaping the popular imagination surrounding scientific culture and deepening the understanding of its relationship with culture. The use of this medium incorporates insights into the potential and social transformation of this science, while also highlighting that interdisciplinary scc is richer and more fruitful.

Resumo. O presente trabalho busca compreender de maneira ampla a potencialidade do formato de publicação independente chamado “zine” como meio de divulgação científica e cultural (dcc) na astronomia e mais especificamente, porque ele pode ser uma mídia muito relevante a ser aplicada nessa ciência. Os zines são um formato de publicação independente que carrega uma vasta história de comunicação de pensamentos de forma crítica, uma mídia alternativa carregada de arte e literatura. A astronomia é uma ciência extremamente multidisciplinar que ainda possui grandes barreiras no entendimento público e imaginário popular. Muitas vezes a mídia hegemônica não é capaz de comunicá-la bem, reduzindo-a a entendimentos prevaletentes. A dcc na astronomia é uma importante ferramenta de inclusão social, portanto buscar abordar diversas questões da astronomia por uma visão alternativa, que não resume esse conhecimento vasto e rico tem potencial transformador para a sociedade. A pesquisa envolveu a coleta e a revisão bibliográfica de diversos trabalhos sobre essa mídia, para a futura criação de uma coletânea de zines de dcc na astronomia. Historicamente, foi possível observar uma vasta gama de aplicações dos zines. Dadas as referências de trabalhos que estudam essa mídia, podemos verificar resultados positivos do seu uso dentro de salas de aula, como meio de ensino e tem-se mostrado como um ótimo material de estudo em diversas áreas. A possibilidade da aplicação dessa tecnologia à dcc na astronomia, seria uma forma de comunicarmos as questões da astronomia e ciência de forma geral, fazendo uso de ferramentas transformadoras que modifiquem o imaginário popular sobre a cultura científica, entendendo a sua relação com a cultura. O uso da mídia incorpora entendimentos sobre as potencialidades e transformação social dessa ciência, mas também do entendimento que uma dcc interdisciplinar, é mais rica e frutífera.

Keywords. Teaching of Astronomy – Sociology of Astronomy – History and philosophy of astronomy

1. Introduction

Zines are an independent publishing format with a long historical of critically conveying ideas. They are an alternative medium, rich in art and literature, that has become the subject of study in various fields, with their popularization dating back to the 1930s and 1940s. Astronomy is a science in which we still face significant barriers in public understanding and in the popular imagination, which often diminish scientific culture.

2. Zines and initiatives

The choice to use zines stems from the need to expand an interdisciplinary perspective on science, strengthening interdisciplinarity, which is widely discussed in various educational settings as an alternative to overcoming the fragmentation of knowledge and promoting diverse and meaningful understanding. Several studies, in this context, argue that interdisciplinarity supports the construction of more meaningful and contextualized knowledge, bringing theory closer to practice and providing a broader view of the world through education, according to Jesus (2024).

Currently, there are initiatives that use zines as a medium of science communication. In Brazil, one example is an initiative from the Federal University of São Carlos (UFSCar) called e-Zine, a website resulting from the Teaching and Research Project “Communication and expression: interfaces with science, technology, society, and language,” from the Department of Languages. Another initiative is The Small Science Collective, a website that gathers various science-themed zines, founded by Andrew S. Yang and maintained by volunteers.

There are few studies on the application of zines; however, several initiatives use the creation and study of zines in education across different fields, such as “Fanzines in education: some classroom experiences” (Pinto, 2020); “Zine: art, resistance, and pedagogical actions” (Sousa, 2022); and “Use of fanzines in science classes: a systematic literature review” (Rodrigues, 2023).

3. Needs of science and cultural communication in astronomy

Astronomy science and cultural communication is an important tool for social inclusion. Astronomy is a science that addresses

a variety of questions regarding human understanding of the world, making it a particular case of interdisciplinary knowledge (Gouveia, 2009). Confronting and speculating about the enigmas of life and the universe is part of young people's concerns, and a cosmological view of the sciences can spark curiosity and motivate the pursuit of new knowledge (Bertol, 2013).

The dominant approach to teaching physics, which is a big correlated science with astronomy, is limited to the memorization of formulas applied to solving exercises. Educational interventions that address the history of physics, the philosophy of science, and its relationship with society and other areas of culture have contributed to building an education engaged with social transformation (Zanetic, 2005). In addition, physics education has been reduced in Brazilian schools, limiting students' contact with more advanced concepts (Almeida, 2022).

Therefore, it is clear that there is a need for science communication that uses transformative tools capable of reshaping the public's perception of this field. Using a medium that incorporates an understanding of the social transformation potential of astronomy communication, while also recognizing that interdisciplinary science communication is richer and more fruitful, can help achieve this goal.

4. Zine as a means of transformation

Given the references to works showing positive results from the use of zines in classrooms and the fact that they have proven to be excellent study materials across various fields, a good reception from the public is expected, along with the creation of a connection to the themes addressed in the collection. Through the initiatives presented here, we can see that zines have been applied in science and cultural communication, demonstrating possible advantages and great potential, as evidenced by the many publications that adopt this approach.

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